

XXVI.—On the Distribution of the Mollusca in Depth on the Coasts of Nordland and Finmark. By R. M'ANDREW, F.R.S. and L. BARRETT, F.G.S.

WE have divided the space between high water and 200 fathoms into four zones: the first, or Littoral zone includes the shore between high- and low-water marks; the Laminarian zone extends from low water to 20 fathoms; the Coralline zone between 20 and 60 fathoms; and the deep-sea Coral zone includes the ground between 60 fathoms and the greatest depth explored, which was 200 fathoms. We have given a list of the shells found in each zone.

#### Littoral Zone.

The species found living at low water on the coast of Finmark are all Arctic, the same species being inhabitants of the littoral zone of Greenland. In Nordland, *Patella vulgata*, *Trochus tumidus* and *Trochus cinerarius* are abundant in this zone, but they do not range to Finmark or Greenland; while *Buccinum cyaneum* and *Natica clausa*, abundant species in Finmark, are not found farther south than the northern part of Nordland. When the shore is composed of sand or mud, bivalve Mollusca are most common. On a rocky coast Gasteropoda are abundant, and Conchifera scarce. Several species included in the following lists ought perhaps to be considered inhabitants of the next zone, though they occurred abundantly on several occasions at extreme low water.

#### Testacea of the Littoral Zone.

##### Shore Rock.

*Buccinum cyaneum*\*.  
 — undatum.  
*Purpura lapillus*\*.  
*Bela turricula*?  
*Littorina littorea*\*.  
 — rudis\*.  
 — arctica\*.  
 — groenlandica\*.  
*Lacuna vincta*?  
*Rissoa ulvæ*\*.  
*Skenea planorbis*\*.  
*Trochus tumidus*.  
 — cinerarius.  
*Margarita undulata*?  
 — helicina.  
*Acmæa testudinalis*\*.  
*Dendronotus arborescens*.  
*Mytilus edulis*\*.  
*Crenella discors*.  
*Saxicava arctica*.

##### Shore Sand.

*Natica clausa*.  
*Mya truncata*\*.  
 — arenaria\*.  
*Astarte compressa*?  
 — arctica?  
*Cardium edule*?

Note.—The asterisk indicates that the species attains its maximum of development in that region; the note of interrogation implies that the species is probably a straggler.

*Laminarian Zone.*

The ground in this region is generally rock; between low water and 15 fathoms the bottom is covered with *Laminaria*, and below 15 fathoms with a small red weed, which is the favourite habitat of *Margarita cinerea*. On the fronds of the *Laminaria* abound several species, as *Lacuna vineta*, *Trichotropis borealis*, *Margarita helicina* and *undulata*, and *Patella pellucida*. In the south, *Uraster rubens*, *Echinus sphaera* and *Echinus miliaris* are common among *Laminaria*; in the north, *Echinus neglectus* is found in great numbers just below low-water mark.

*Testacea of the Laminarian Zone.*

## GASTEROPODA.

Cancellaria viridula.	Lacuna labiosa.
Trichotropis borealis.	Rissoa calathus.
Fusus antiquus.	—— striata.
Trophon clathratus.	—— parva.
—— Gunneri.	—— rufilabrum.
Buccinum undatum.	Skenea, species.
Nassa reticulata.	Trochus millegranus.
—— incrassata.	—— tumidus.
Bela turricula.	—— cinerarius.
—— rosea.	Margarita helicina.
—— rufa.	—— undulata.
—— mitrula.	—— cinerea.
—— Trevelliana.	Puncturella noachina.
Defrancia linearis.	Emarginula reticulata.
Natica nitida.	Pileopsis hungaricus.
—— Montagui.	Patella pellucida.
—— helicoides.	Acmæa virginea.
—— pusilla.	—— testudinalis.
—— clausa.	Pilidium fulvum.
Velutina lævigata.	Dentalium entale.
—— flexilis.	Chiton ruber.
Odostomia plicata.	—— asellus.
Cerithium reticulatum.	—— marmoreus.
Aporrhais pes-pelecani.	—— cancellatus.
Turritella communis.	Cylichna truncata.
Scalaria groenlandica.	Philine scabra.
—— Loveni.	—— aperta.
Littorina littorea.	Aplysia hÿbrida.
Lacuna vineta.	

## LAMELLIBRANCHIATA.

Anomia ephippium.	Pecten pusio.
—— patelliformis.	—— striatus.
—— aculeata.	—— similis.
Pecten opercularis.	Lima hians.
—— islandicus.	—— Loscombii.

Lima subauriculata.	Astarte sulcata.
Mytilus edulis.	— elliptica.
Modiola modiolus.	— arctica.
Crenella decussata.	— compressa.
— discors.	Venus striatula.
— nigra.	— ovata.
— marmorata.	Mactra elliptica.
Arca nodulosa.	Tellina solidula.
Nucula nucleus.	— fabula.
— tenuis.	Psammobia ferroensis.
Leda caudata.	— tellinella.
— lucida.	Syndosmya alba.
Cardium echinatum.	— prismatica.
— edule.	— intermedia.
— fasciatum.	Solen pellucidus.
— nodosum.	Mya truncata.
Lucina borealis.	— arenaria.
— flexuosa.	Corbula nucleus.
Artemis exoleta.	Saxicava arctica.
— lineta.	Thracia convexa.
Kellia suborbicularis.	— phaseolina.
Montacuta substriata.	Periploma prætenuis.
Cyprina islandica.	Lyonsia arenosa.

### Coralline Zone.

This region is very rich in Mollusca, and many of the rarest northern shells were obtained from it. The most common and generally distributed shells are, *Trophon Gunneri*, *Pleurotoma nivale*, *Cerithium metula*, *Scalaria grœnlandica*, *Trochus milligranus*, *Margarita alabastrum* and *cinerea*, *Patella caca*, *Pilidium fulvum*, *Chiton asellus*, *Cylichna cylindracea*, *Terebratula cranium*, *Terebratulina caput-serpentis*, *Crania anomala*, *Pecten islandicus* and *striatus*, *Modiola phaseolina*, *Crenella nigra*, *Nucula nucleus* and *tenuis*, *Astarte crebricostata* and *elliptica*. Echinodermata are not so abundant as in the next zone, but several species are common, among which are *Echinus miliaris*, *Amphidetus ovatus*, *Schizaster fragilis*, *Astropecten Müllerii*, *Luidia fragilissima*, *Amphiura filiformis*, and *Ophiopholis aculeata*.

### Testacea of the Coralline Zone.

#### GASTEROPODA.

Cancellaria viridula.	Bela turricula.
Trichotropis borealis.	— rufa.
Fusus antiquus.	— Trevelliana.
Trophon clathratus.	Defrancia linearis.
— Gunneri.	— pyramidalis.
Buccinum undatum.	Natica nitida.
— Humphreysianum.	— Montagui.
— fusiforme.	— helicoides.
Nassa incrassata.	— pusilla.
Pleurotoma nivale.	— clausa.

Lamellaria prodita.	Margarita undulata.
Velutina lævigata.	— cinerea.
— flexilis.	Scissurella crispata.
Odstomia plicata.	— angulata.
Chemnitzia, sp.	Puncturella noachina.
Eulimella Scillæ.	Emarginula reticulata.
Eulima bilineata.	Patella cæca.
— polita.	Acmæa virginea.
Cerithium metula.	Pilidium fulvum.
— reticulatum.	Dentalium entale.
Triforis M'Andrei.	Chiton Hanleyi.
Aporrhais pes-pelecani.	— ruber.
Turritella communis.	— asellus.
Scalaria grœnlandica.	— lævis.
— Loveni.	— marmoreus.
Lacuna vineta.	Tornatella fasciata.
Rissoa striata.	Cylichna alba.
Skenea, species.	— cylindraca.
Trochus millegranus.	— truncata.
— tumidus.	Amphisphyræ hyalina.
— cinerarius.	Scaphander librarius.
Margarita alabastrum.	Philine scabra.
— helicina.	— quadrata.

## BRACHIOPODA.

Terebratula cranium.	Rhynchonella psittacea.
Terebratulina caput-serpentis.	Crania anomala.

## LAMELLIBRANCHIATA.

Anomia ehippium.	Cardium edule.
— patelliformis.	— fasciatum.
— aculeata.	— nodosum.
— striata.	— suecicum.
Pecten opercularis.	— elegantulum.
— islandicus.	Lucina borealis.
— tigrinus.	— flexuosa.
— striatus.	— ferruginosa.
— similis.	Artemis lincta.
Lima hians.	Kellia suborbicularis.
— Loscombi.	Montacuta bidentata.
— subauriculata.	Cyprina islandica.
Mytilus edulis.	Astarte sulcata.
Modiola modiolus.	— crebricostata.
— phaseolina.	— elliptica.
Crenella decussata.	— arctica.
— discors.	— compressa.
— nigra.	Venus striatula.
— marmorata.	— ovata.
Arca pectunculoides.	Mactra elliptica.
— nodulosa.	Tellina solidula.
Nucula nucleus.	— proxima.
— tenuis.	Psammobia ferroensis.
Leda pernula.	— tellinella.
— caudata.	Syndosmya alba.
— lucida.	— prismatica.
Cardium echinatum.	— intermedia.

Solen pellucidus.  
 Mya truncata.  
 — arenaria.  
 Neæra cuspidata.  
 — costellata.

Neæra obesa.  
 Saxicava arctica.  
 Thracia convexa.  
 — phaseolina.  
 Teredo norvegica.

#### Deep-sea Coral Zone.

Off the coast of Nordland the ground of this zone was generally mud, but in the north a fine gravel or sand. The characteristic shells of the region are, *Eulimella Scillæ*, *Dentalium vitreum*, *Cylichna alba*, *Cardium fasciatum* and *succicum*, *Leda lucida*, *Lucina flexuosa*, and *Arca raridentata*.

Most of the Arctic Echinodermata are found in this zone; the following are the species most generally met with:—*Psolus squamatus*, *Eupyrgus hispidus*, *Schizaster fragilis*, *Amphidetus ovatus*, the three species of *Astrogonium*, *Pteraster militaris*, *Ctenodiscus crispatus*, *Astropecten arcticus* and *Lutkeni*, *Ophiura albida* and *Ophiacantha spinulosa*. *Oculina prolifera* has only been taken living in this zone. Several species of Sponge are common.

#### Testacea of the Deep-sea Coral Zone.

##### GASTEROPODA.

Cancellaria viridula.  
 Trichotropis borealis.  
 Fusus propinquus.  
 — islandicus.  
 — norvegicus.  
 Trophon clathratus.  
 — Gunneri.  
 — craticulatus.  
 Buccinum Dalei.  
 — Humphreysianum.  
 — fusiforme.  
 — undatum.  
 Pleurotoma nivale.  
 Bela turricula.  
 — rufa.  
 — Trevelliana.  
 Defrancia pyramidalis.  
 Natica Montagni.  
 — pusilla.  
 — clausa.  
 Chemnitzia, sp.

Eulimella Scillæ.  
 Eulima bilineata.  
 Cerithium metula.  
 Triforis M'Andrei.  
 Aporrhais pes-carbonis.  
 Margarita alabastrum.  
 — undulata.  
 — cinerea.  
 Scissurella crispata.  
 Puncturella noachina.  
 Patella cæca.  
 Pilidium fulvum.  
 Dentalium entale.  
 — vitreum.  
 Chiton Hanleyi.  
 — asellus.  
 — alveolus.  
 Cylichna alba.  
 — truncata.  
 Philine quadrata.

##### BRACHIOPODA.

Terebratula cranium.  
 Terebratulina caput-serpentis.

Rhynchonella psittacea.  
 Crania anomala.

##### LAMELLIBRANCHIATA.

Anomia ephippium.  
 Pecten tigrinus.  
 — groenlandicus.

Pecten, sp.  
 —, sp.  
 Lima subauriculata.

Lima excavata.	Cardium nodosum.
Limopsis, sp.	— suecicum.
Modiola phaseolina.	— fasciatum.
Crenella decussata.	Lucina flexuosa.
— discors.	— ferruginosa.
— nigra.	Astarte sulcata.
— marmorata.	— crebricostata.
Area pectunculoides.	Venus ovata.
Nucula tenuis.	Tellina proxima.
— corticata.	Syndosmya intermedia.
Leda pernula.	Næra cuspidata.
— caudata.	Thetis Korenii.
— lucida.	Saxicava arctica.
— pygmæa.	Thracia convexa.
— limatula.	Lyonsia striata.

XXVII.—*Descriptions of new Ceylon Coleoptera.*

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[Continued from p. 190.]

43. *Cyclosomus dyticolides*, N.

*C. suborbicularis*, depressus, obscure castaneus, elytris piceis fasciis 2 testaceis ornatis, pedibus brunneo-testaceis, tarsis, antennis oreque magis minusve brunneis. Long. corp.  $4\frac{1}{2}$ –5 lin.; lat.  $2\frac{1}{2}$ –3 lin.

Antennæ art. 3–11 *depressis*. Thorax transversus, antice profunde semilunariter sinuatus; basi quadratus, medio leviter subquadrato emarginatus, elytris parum angustior, ante scutellum subtiliter strigosus; apicem versus sensim angustatus. Elytra basi subquadrata, striata, fasciis 2 (una subhumerali, altera subapicali) transversalibus, interruptis, interstitia 2–8 occupantibus, testaceis ornata. Pedes tibiis apice 2-calcaratis, *calcaribus 2-serratis*, *tarsis maris 2 anterioribus art. 1–3 subtus leviter dupliciterque penicillatis, intermediis fortiter simpliciterque penicillatis*. Prosternum subhastatum.

In prov. occid. arenis peraridis *Amararum* more victitat.

To judge from what Lacordaire says of this genus in his 'Genres des Coléoptères' (a work which, as I have said elsewhere, I look upon as containing the essence of all former researches), it would appear that the present species differs very materially from the three others hitherto described, namely in the flatness of the antennal joints, in the serrated edges of the tibial spurs, in the existence of the tarsal brushes in the male, and in the colour,—to say nothing of some other minor distinctions. The first three of these peculiarities (too important not to have been noticed by Lacordaire or any other describer of the genus, had they been aware of them) add considerably to the characteristics which already constitute this genus one of the most remarkable of the extensive family of the Carabidæ, whilst through the colour of